University of California
College of Agriculture
Agricultural Experiment Station
Berkeley, California

AN ANALYSIS OF THE PRICES RECEIVED FOR CANNED PEACHES BY CANNERS IN CALIFORNIA -- SEASONS, 1922-23 THROUGH 1934-35

by

H. J. Stover

June, 1935

Contribution from the
Giannini Foundation of Agricultural Economics
Mimeographed Report No. 42

Digitized by the Internet Archive
in 2014

https://archive.org/details/analysisofprices42stov

AN ANALYSIS OF THE PRICES RECEIVED FOR CANNED PEACHES BY CANNERS IN CALIFORNIA -- SEASONS, 1922-23 THROUGH 1934-35

H. J. Stover [1]

In response to a need for some basis for estimating the probable quantities of canned peaches which might be sold during a given season at various prices and with various assumed demand conditions, an analysis was made to determine the more important factors which have been responsible for the variations in the annual average f.o.b. prices received for canned peaches by canners in California from 1922-23 to 1934-35 and to measure the influence of each of these factors upon those prices. The results presented herein constitute a report of that analysis.

Users of this report should clearly recognize the fact that the analysis explains only what has occurred in the past. It does not forecast what will happen in the future. The analysis is designed merely to serve as a helpful guide in estimating either the probable price at which a given quantity of canned peaches can be sold or the probable quantity that can be sold at a given price, under given conditions. In making these estimates, it is first necessary to determine the probable future positions of the factors which have affected canned-peach prices in the past.

Relation Between the F.O.B. Prices and Shipments of Canned Peaches.-- The historical picture of canned-peach packs, carryovers, supplies available for shipment, shipments, and f.o.b. prices received by canners since 1922 is presented in table 1. In 1934 the pack amounted to 8,598,000 cases, on a 2½-can basis. The carryover from the 1933-34 season was 2,390,000 cases, which, added to the pack figure, gave a total supply of 10,988,000 cases available for shipment during the 1934-35 season. Shipments amounted to 9,132,000 cases, leaving a carryover into the 1935-36 season of 1,856,000 cases. The average f.o.b. price received by canners for the canned peaches sold during the 1934-35 season was $2.69 per case -- an increase of 16 per cent over the price received the preceding year.

In figure 1 the f.o.b. prices received by canners given in column 6 of table 1 are plotted against the shipments of canned peaches given in column 4 of table 1. The average net relationship between these two factors (meaning the relationship which would be expected after relationships with other factors have been taken into account) is indicated by the curve in this chart. Comparisons of the actual f.o.b. prices of canned peaches with the prices estimated from this curve are made in table 2. The portion of the variation in canned peach prices which has not been accounted for by the relationship expressed in figure 1 is given in column 4 of table 2.

Relation Between the Variations in Canned-Peach Prices Unexplained by the Relationship with Shipments and General Demand Conditions.-- One of the most important factors affecting the price at which a given quantity of any product can be sold during a given season is the condition of consumer demand for the

---

[1] Assistant Professor of Agricultural Economics, Assistant Agricultural Economist in the Experiment Station, and Assistant Agricultural Economist on the Giannini Foundation.

---

product at that time. Of the many factors which determine the status of this demand, there is one which is of paramount importance. That factor is consumer income. The higher the level of consumer incomes, the higher may one expect the prices to be at which a given quantity of a product can be sold.

A monthly index of urban-consumer income in the United States has been compiled recently by the Agricultural-Industrial Relations Section of the Agricultural Adjustment Administration. In this index, weight was given to industrial workers' income, to trade, to service industries, to public utilities, to government, and to interest and dividends. The index, as now compiled, is a substitute for the index of the incomes of urban consumers which was constructed by the Bureau of Agricultural Economics of the United States Department of Agriculture and discontinued in December, 1933. Monthly data for the period since January, 1922 are presented in figure 2.

The unexplained variations in canned-peach prices given in column 4 of table 2 are plotted against the index of urban-consumer income in figure 3. The data are presented in tabular form in table 3.

The slope of the line in figure 3 indicates the degree to which changes in consumer incomes have influenced the prices of canned peaches during the thirteen years included in the analysis. The variations in canned peach prices which have not been accounted for either by variations in shipments or by variations in consumer income, as measured by the index numbers, are given in column 4 of table 3.

Influence of the Prices of Competing Canned Fruits Upon the Prices Received for Canned Peaches.-- Second in importance to consumer income as a factor in determining the status of demand for canned peaches is the comparative level of the prices of canned fruits which compete with peaches. With general demand conditions the same, one might well expect higher prices for canned peaches during a season in which canned pears, apricots, and pineapples (the main fruits competing with peaches) are high in price than during a season in which these fruits are relatively cheap. Likewise, when other canned fruits are relatively low in price, one would expect the substitution of these products for canned peaches to act as a depressing agent upon the price of the latter.

An approximate measure of competing canned fruit prices which has been used in this analysis was developed by the author. Limitations of time and in data did not permit the development of a more refined indicator of this factor at this time. The material presented in table 4 indicates the method used in constructing what has been termed "an index of competing canned fruit prices." In brief, annual opening prices of canned pears, canned apricots, and canned pineapple were reduced to an approximately comparable level by expressing each series as a percentage of its 1924-1929 average. Simple averages of these percentages were then calculated, giving the values shown in column 7 of table 4. Since the index of urban-consumer income had been used in the analysis as a measure of general demand conditions, it was necessary to remove the influence of this factor from the measure of competing canned fruit prices. This was done by dividing the figures given in column 7 of table 4 by the index of urban-consumer income given in column 8 of that table. The resultant index of competing canned fruit prices is given in column 9 of table 7.

The effect of competing canned fruit prices upon the price of canned peaches is indicated in figure 4. In this chart the unexplained price variations in column 4 of table 3 are plotted against the index of competing canned fruit prices. The data are presented in tabular form in table 5.

The slope of the line in figure 4 indicates the degree to which changes in competing canned fruit prices have influenced the prices of canned peaches during the thirteen years included in the analysis. The variations in canned peach prices which have not been accounted for by variations in shipments, by variations in consumer income, or by variations in competing canned fruit prices (as each of these factors has been measured), are given in column 4 of table 5.

Comparison of the Estimated with the Actual Prices of Canned Peaches.-- A summary of the variations in canned-peach prices which have been accounted for by each of the several factors taken into consideration is presented in table 6. Estimates of the prices based on their relationship to shipments, index of urban-consumer incomes, and index of competing canned fruit prices are given in column 4. The actual prices are given in column 5.

A comparison of the several estimated prices of canned peaches with the actual prices is shown graphically in figure 5.

Use of the Results of this Analysis.-- As indicated earlier in this report, this analysis has been made for the purpose of providing some basis for estimating the probable quantities of canned peaches which might be sold during a given season at various prices and with various assumed demand conditions.

The curves plotted in figure 6 and the readings from these curves, given in tables 7 and 8, are presented for the purpose of illustrating the proper use of the results of this analysis. If, for example, one should assume that during a particular season demand conditions would approximate those of the 1934-35 season, an estimate of the price which might be expected for shipments of 8,000,000 cases would be $2.81 (see either table 7 or figure 6). Under similar conditions, shipments of 10,000,000 cases might be expected to sell for around $2.61. Considering the problem from the point of view of estimating the quantities of canned peaches which might be sold at a price of, let us say, $2.70 per case, one would, from readings in table 8 or figure 6, estimate that under conditions similar to those of the 1934-35 season, 9,000,000 cases could be sold.

TABLE 1

Pack, Carryover, Shipments, and F.O.B. Prices of Canned Peaches, California, 1922-1935

Year beginning June 1	Pack, 2½-can basis	Carryover from the preceding year	Supply available for shipment	Shipments	Carryover into the following year	F.o.b. prices received by canners
	1	2	3	4	5	6
	thousand cases	thousand cases	thousand cases	thousand cases	thousand cases	dollars per case
1922	8,784	326	9,110	7,001	2,109	4.25
1923	7,158	2,109	9,267	7,692	1,575	3.67
1924	6,141	1,575	7,716	6,918	798	4.21
1925	10,143	798	10,941	10,367	574	3.78
1926	14,059	574	14,633	10,727	3,906	3.66
1927	10,813	3,906	14,719	13,203	1,516	3.17
1928	14,596	1,516	16,112	12,963	3,149	3.21
1929	8,100	3,149	11,249	9,572	1,677	4.08
1930	13,294	1,677	14,971	11,020	3,951	2.88
1931	8,421	3,951	12,372	7,527	4,845	2.55
1932	6,438	4,845	11,283	9,922	1,361	1.97
1933	10,309	1,361	11,670	9,280	2,390	2.31
1934	8,598	2,390	10,988	9,132	1,856	2.69
1935		1,856				

Sources of data:

Cols. 1, 2, 4, and 5: Compiled by the Canners League of California.

Col. 3: Col. 1 plus col. 2.

Col. 6: Compiled from records of canners, Prices are weighted-average prices for all grades and sizes of cans, f.o.b. cannery. Regular brokerage, cash discount, swell allowance, and label allowance are included.

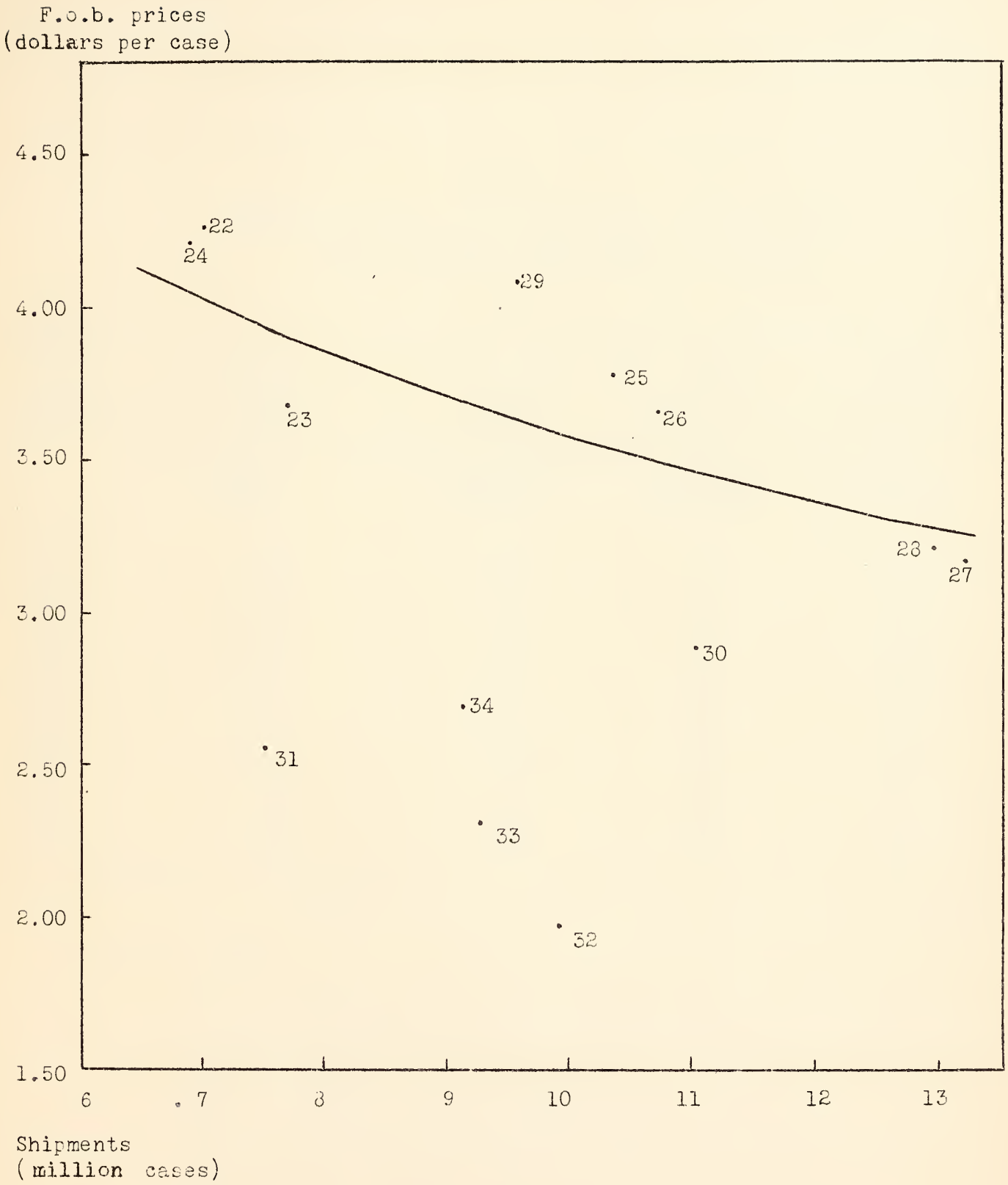

Fig. 1.-- Relation between the f.o.b. prices and shipments of canned peaches, California, 1922-1934 (years beginning June 1). (Data from table 1.)

TABLE 2

Relation Between the F.O.B. Prices and Shipments of Canned Peaches, California, 1922-1934

Year beginning June 1	Shipments of canned peaches	F.o.b. prices of canned peaches	Price estimates (fig. 1)	Price residuals (fig. 1)
	1	2	3	4
	thousand cases	dollars per case	dollars per case	dollars per case
1922	7,001	4.25	4.03	+0.22
1923	7,692	3.67	3.90	-0.23
1924	6,918	4.21	4.04	+0.17
1925	10,367	3.78	3.53	+0.25
1926	10,727	3.66	3.50	+0.16
1927	13,203	3.17	3.26	-0.09
1928	12,963	3.21	3.28	-0.07
1929	9,572	4.08	3.63	+0.45
1930	11,020	2.88	3.46	-0.58
1931	7,527	2.55	3.92	-1.37
1932	9,922	1.97	3.58	-1.61
1933	9,280	2.31	3.67	-1.36
1934	9,132	2.69	3.69	-1.00

Sources of data:

Col. 1: Table 1, col. 4.

Col. 2: Table 1, col. 6.

Col. 3: Readings from curve in fig. 1.

Col. 4: Col. 2 minus col. 3.

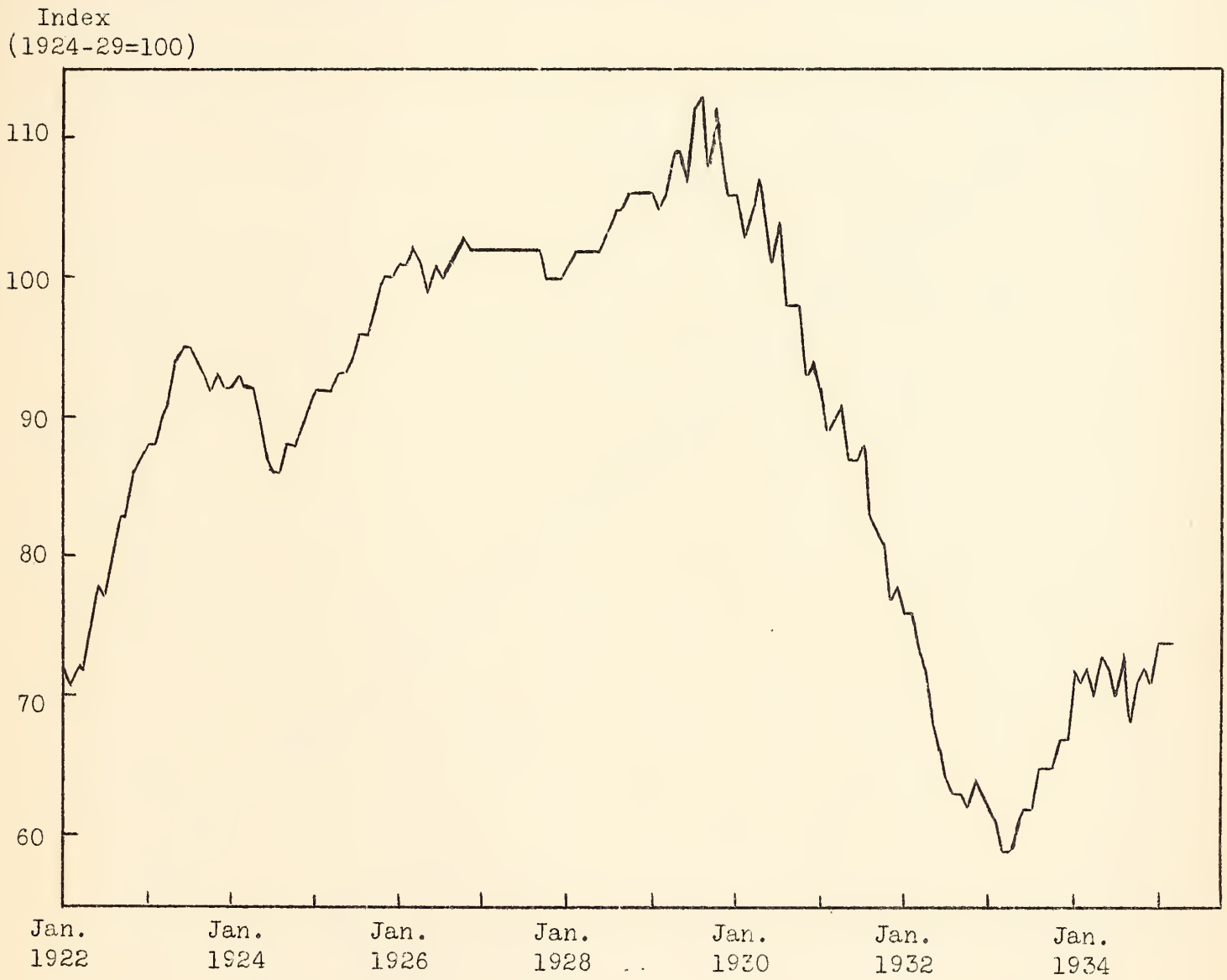

Fig. 2.-- Monthly index of urban-consumer income, United States, 1922-1935. (1924-29=100.) (Data from Agricultural-Industrial Relations Section of the Agricultural Adjustment Administration.)

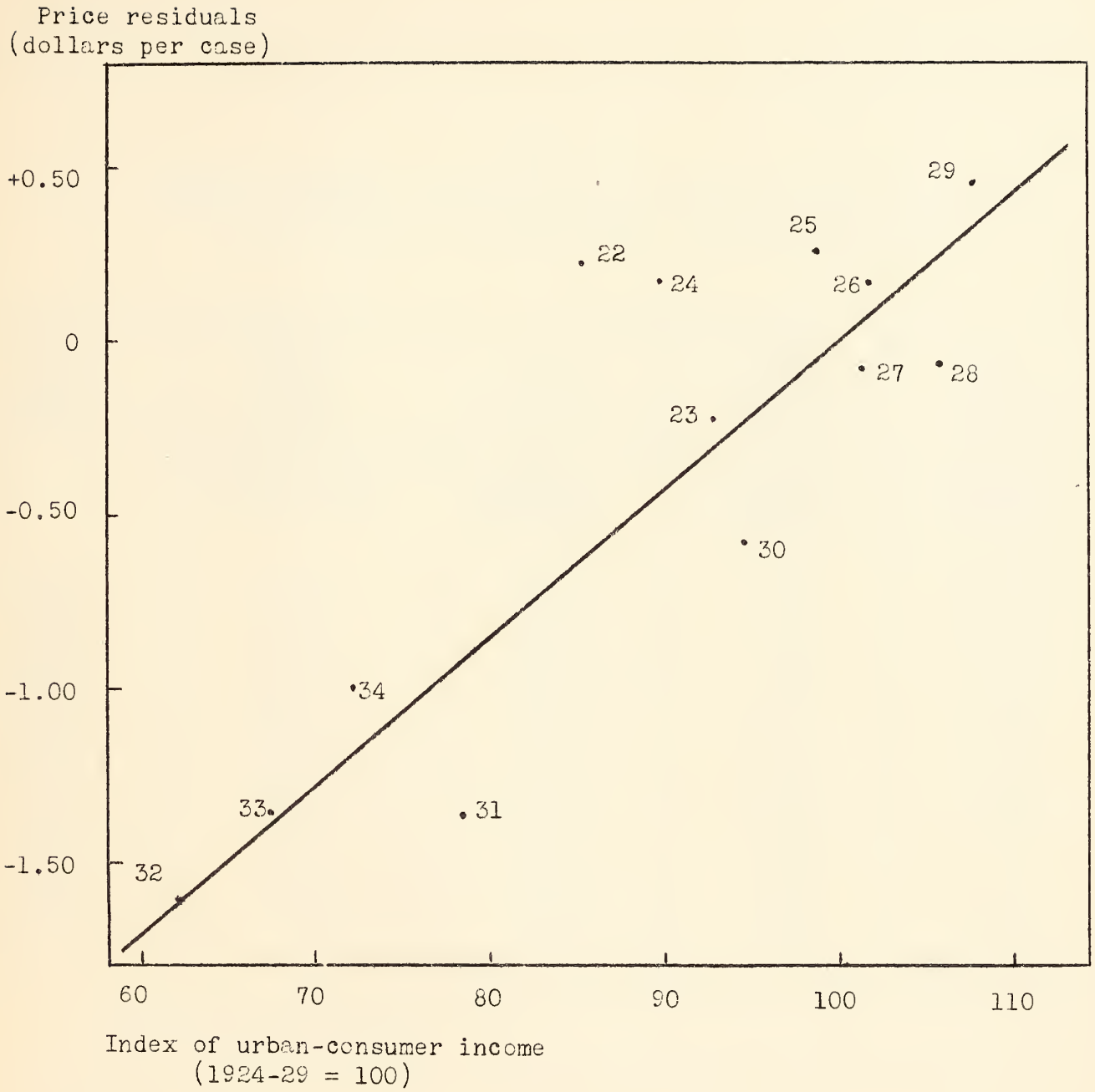

Fig. 3.-- Relation between the unexplained price variations in fig. 1 and an index of urban-consumer income, 1922-1934. (Data from table 3.)

TABLE 3

Relation Between the Unexplained Price Variations in Table 1 and an Index of Urban-Consumer Income, 1922-1934

Year beginning June 1	Index of urban-consumer income	Price residuals (fig. 1)	Price residual estimates (fig. 3)	Price residuals (fig. 3)
	1	2	3	4
	1924-29=100	dollars per case	dollars per case	dollars per case
1922	85.4	+0.22	-0.62	+0.84
1923	92.8	-0.23	-0.31	+0.08
1924	89.8	+0.17	-0.44	+0.61
1925	98.8	+0.25	-0.05	+0.30
1926	101.8	+0.16	+0.08	+0.08
1927	101.4	-0.09	+0.06	-0.15
1928	105.8	-0.07	+0.25	-0.32
1929	107.7	+0.45	+0.33	+0.12
1930	94.6	-0.58	-0.23	-0.35
1931	78.4	-1.37	-0.92	-0.45
1932	62.2	-1.61	-1.61	0
1933	67.6	-1.36	-1.38	+0.02
1934	72.2 *	-1.00	-1.18	+0.18

* Preliminary estimate.

Sources of data:

Col. 1: Unpublished index compiled by the Agricultural-Industrial Relations Section of the Agricultural Adjustment Administration.

Col. 2: Table 2, col. 4.

Col. 3: Readings from the curve in fig. 3.

Col. 4: Col. 2 minus col. 3.

TABLE 4

Method of Construction of an Index of the Prices of Canned Fruits Competing with Canned Peaches, 1922-1934

Year beginning June 1	Opening prices (dollars per dozen cans)			Index of opening prices (1924-29=100)				Index of urban-consumer income	Index of competing canned fruit prices
	Pears, No. 2½ Choice	Apricots, No. 2½ Choice	Pineapples, No. 2½ Fancy	Pears, No. 2½ Choice	Apricots, No. 2½ Choice	Pineapples, No. 2½ Fancy	Combined index		
	1	2	3	4	5	6	7	8	9
	dollars	dollars	dollars	per cent	per cent	per cent	per cent	1924-29=100	1924-29=100
1922	3.15	2.60	2.75	113.3	107.9	120.1	113.8	85.4	133.2
1923	2.65	2.00	3.00	95.3	83.0	131.0	103.1	92.8	111.1
1924	3.00	2.45	2.60	107.9	101.7	113.5	107.7	89.8	119.9
1925	3.15	2.25	2.15	113.3	93.4	93.9	100.2	98.8	101.4
1926	2.50	2.45	2.35	89.9	101.7	102.6	98.1	101.8	96.4
1927	2.50	2.45	2.10	89.9	101.7	91.7	94.4	101.4	93.1
1928	2.40	2.30	2.20	86.3	95.4	96.1	92.6	105.8	87.5
1929	3.15	2.55	2.35	113.3	105.8	102.6	107.2	107.7	99.5
1930	2.05	1.90	2.10	73.7	78.8	91.7	81.4	94.6	86.0
1931	1.85	1.65	1.75	66.5	68.5	76.4	70.5	78.4	89.9
1932	1.50	1.30	1.60	54.0	53.9	69.9	59.3	62.2	95.3
1933	1.50	1.50	1.80	54.0	62.2	78.6	64.9	67.6	96.0
1934	1.85	2.10	1.80	66.5	87.1	78.6	77.4	72.2*	107.2

* Preliminary estimate.

Sources of data:

Cols. 1 and 2: Western Canner and Packer, March 20, 1935. p. 72.

Col. 3: Western Canner and Packer. March 20, 1935. p. 88.

Cols. 4, 5, and 6: Prices in cols. 1, 2 and 3 expressed as percentages of their respective 1924 through 1929 averages.

Col. 7: Average of cols. 4, 5, and 6.

Col. 8: Table 3, col. 1.

Col. 9: Col. 7 expressed as a percentage of col. 8.

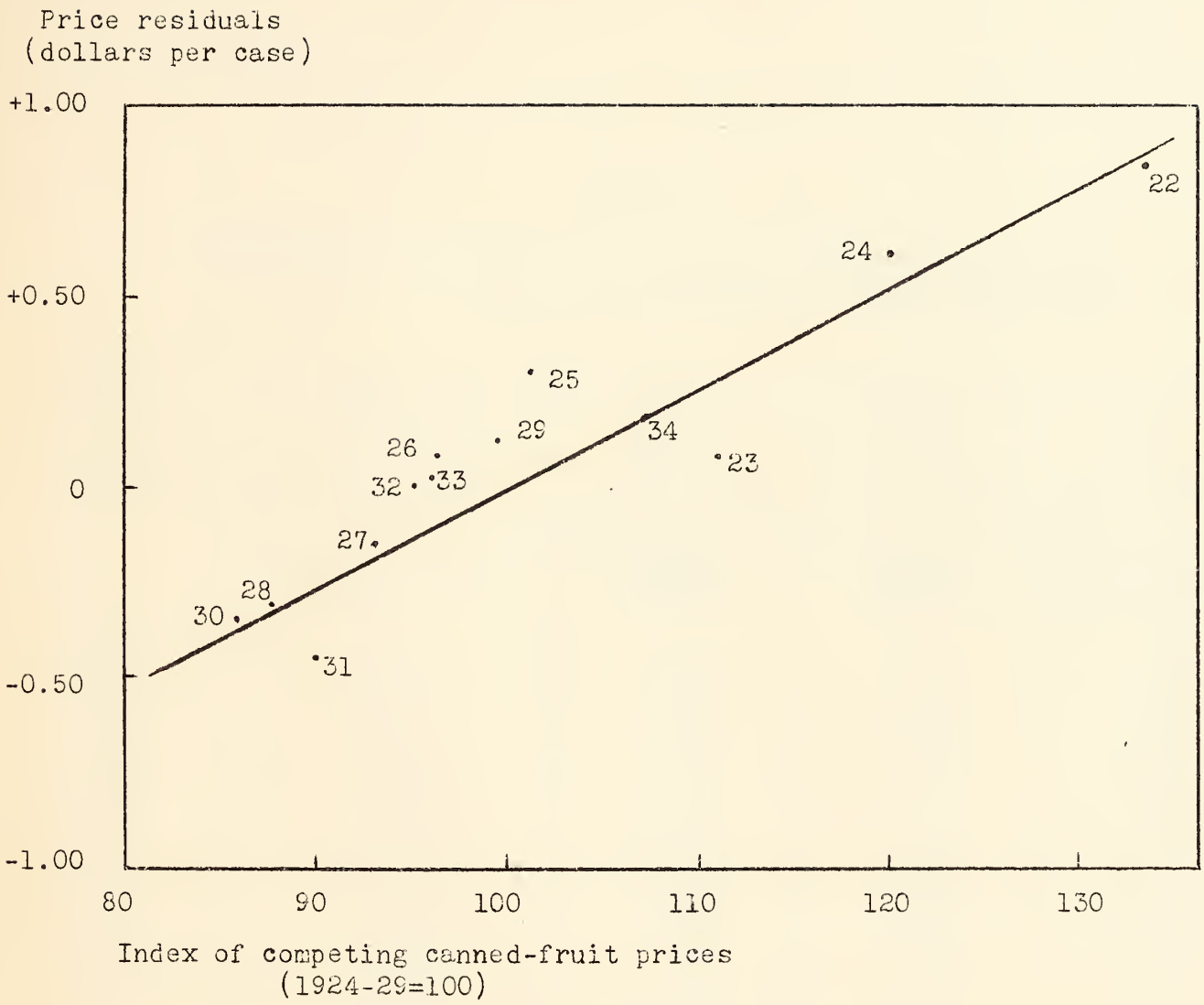

Fig. 4.-- Relation between the unexplained price variations in fig. 2 and an index of competing canned fruit prices, 1922-1934. (Data from table 5.)

TABLE 5

Relation Between the Unexplained Price Variations in Table 2 and an Index of Competing Canned Fruit Prices, 1922-1934

Year beginning June 1	Index of competing canned fruit prices	Price residuals (fig. 3)	Price-residual estimates (fig. 4)	Price residuals (fig. 4)
	1	2	3	4
	1924-29=100	dollars per case	dollars per case	dollars per case
1922	133.2	+0.84	+0.88	-0.04
1923	111.1	+0.08	+0.29	-0.21
1924	119.9	+0.61	+0.52	+0.09
1925	101.4	+0.30	+0.03	+0.27
1926	96.4	+0.08	-0.10	+0.18
1927	93.1	-0.15	-0.18	+0.03
1928	87.5	-0.32	-0.32	0
1929	99.5	+0.12	-0.01	+0.13
1930	86.0	-0.35	-0.37	+0.02
1931	89.9	-0.45	-0.26	-0.19
1932	95.3	0	-0.13	+0.13
1933	96.0	+0.02	-0.11	+0.13
1934	107.2	+0.18	+0.19	-0.01

Sources of data:

Col. 1: Table 4, col. 9.

Col. 2: Table 3, col. 4.

Col. 3: Readings from curve in fig. 4.

Col. 4: Col. 2 minus col. 3.

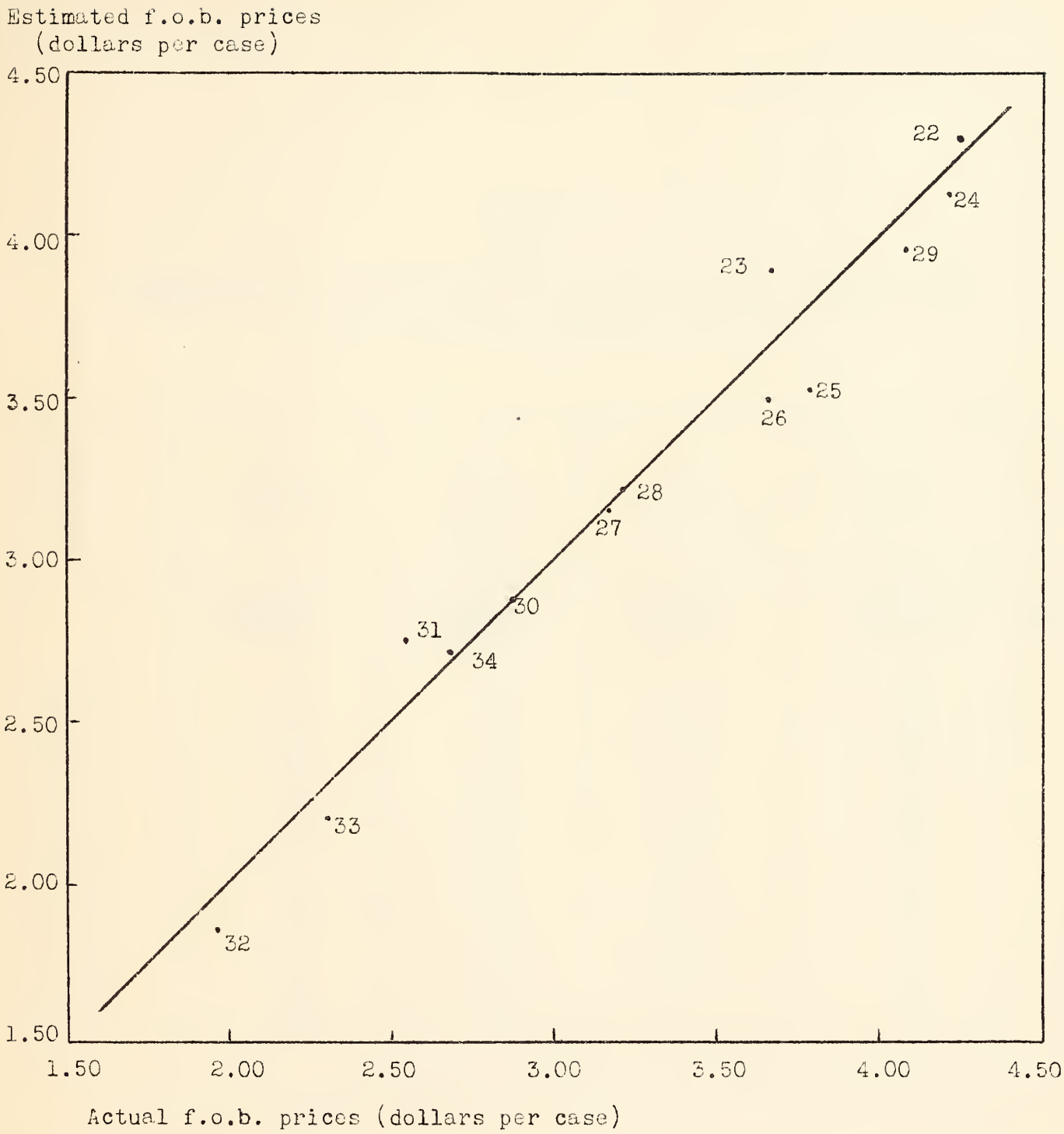

Fig. 5.-- Comparison of prices estimated from relationships between actual prices and important factors affecting them with actual f.o.b. prices of canned peaches, 1922-1934. (Data from table 6.)

TABLE 6

Comparison of Prices Estimated from Relationships Between Actual Prices and Important Factors Affecting them with Actual F.O.B. Prices of Canned Peaches, 1922-1934

Year beginning June 1	Price estimates (fig. 1)	Price-residual estimates (fig. 3)	Price-residual estimates (fig. 4)	Estimated f.o.b. prices	Actual f.o.b. prices
	1	2	3	4	5
	dollars per case	dollars per case	dollars per case	dollars per case	dollars per case
1922	4.03	-0.62	+0.88	4.29	4.25
1923	3.90	-0.31	+0.29	3.88	3.67
1924	4.04	-0.44	+0.52	4.12	4.21
1925	3.53	-0.05	+0.03	3.51	3.78
1926	3.50	+0.08	-0.10	3.48	3.66
1927	3.26	+0.06	-0.18	3.14	3.17
1928	3.28	+0.25	-0.32	3.21	3.21
1929	3.63	+0.33	-0.01	3.95	4.08
1930	3.46	-0.23	-0.37	2.86	2.88
1931	3.92	-0.92	-0.26	2.74	2.55
1932	3.58	-1.61	-0.13	1.84	1.97
1933	3.67	-1.38	-0.11	2.18	2.31
1934	3.69	-1.18	+0.19	2.70	2.69

Sources of data:

Col. 1: Table 2, col. 3.

Col. 2: Table 3, col. 3.

Col. 3: Table 5, col. 3.

Col. 4: Col. 1 plus col. 2 plus col. 3.

Col. 5: Table 1, col. 6.

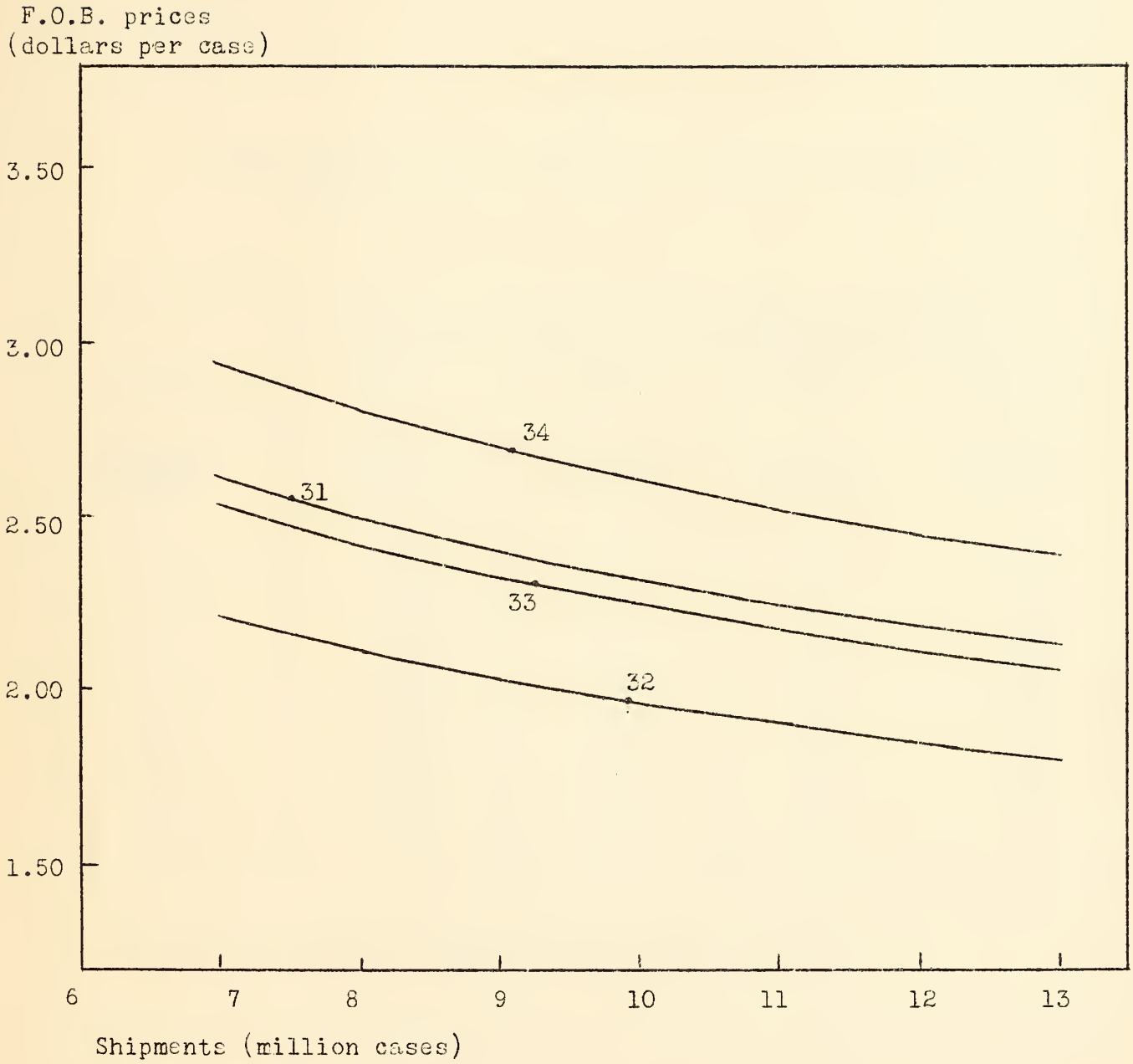

Fig. 6.-- Prices which might be expected for various quantities of canned peaches with demand conditions similar to those during the 1931-32, 1932-33, 1933-34, and 1934-35 seasons. (For readings from this chart, see tables 7 and 8.)

TABLE 7

Prices Which Might be Expected for Various Quantities of Canned Peaches with Various Demand Conditions

Shipments	Prices which might be expected with demand conditions similar to those present during the			
	1931-32 season	1932-33 season	1933-34 season	1934-35 season
million cases	dollars per case	dollars per case	dollars per case	dollars per case
7.0	2.62	2.22	2.54	2.94
7.5	2.56	2.17	2.48	2.87
8.0	2.50	2.12	2.42	2.81
8.5	2.45	2.08	2.37	2.75
9.0	2.40	2.04	2.33	2.70
9.5	2.36	2.00	2.29	2.65
10.0	2.32	1.96	2.25	2.61
10.5	2.28	1.93	2.22	2.56
11.0	2.25	1.90	2.18	2.52
11.5	2.22	1.88	2.14	2.48
12.0	2.19	1.85	2.11	2.45

Source of data: Readings from curves in fig. 6.

TABLE 8

Quantities of Canned Peaches Which Might be Sold at Various Prices with Various Demand Conditions

F.O.B. prices	Quantities which might be sold with demand conditions similar to those present during the			
	1931-32 season	1932-33 season	1933-34 season	1934-35 season
dollars per case	million cases	million cases	million cases	million cases
2.00	--	9.5	--	--
2.10	--	8.2	12.2	--
2.20	11.8	7.2	10.7	--
2.30	10.3	--	9.4	--
2.40	9.0	--	8.2	12.9
2.50	8.0	--	7.3	11.3
2.60	7.1	--	--	10.1
2.70	--	--	--	9.0
2.80	--	--	--	8.1
2.90	--	--	--	7.3

Source of data: Readings from curves in fig. 6.